Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Currently amended) A method for suppressing ~~the immune system~~ T cell function of an animal, comprising administering to the animal an amount of a *hedgehog* agonist effective to suppress ~~the immune system~~ T cell function, wherein the *hedgehog* agonist is a polypeptide which includes a *hedgehog* amino acid sequence that is at least 90% identical to at least one of SEQ ID Nos. 10-18, or any fragment thereof that binds to a *patched* polypeptide.

3. (Withdrawn) A method for enhancing the immune system of an animal comprising administering to the animal an immunostimulatory amount of a *hedgehog* antagonist.

4. (Canceled)

5. (Canceled)

6. (Currently amended) The method of claim [[4]]2 or 31, wherein the hedgehog amino acid sequence is ~~at least 90 percent~~ identical to at least one of SEQ ID Nos. 10-18 or any fragment thereof that binds to a *patched* polypeptide.

7. (Currently amended) The method of claim [[4]]2 or 31, wherein the hedgehog amino acid sequence is encodable by a nucleic acid which hybridizes under stringent conditions of 6.0 x sodium chloride/sodium citrate (SSC) at about 45 °C, followed by a wash of 2.0 x SSC at 50 °C, to at least one of SEQ ID Nos. 1-9.

8. (Currently amended) The method of claim [[4]]2 or 31, wherein the hedgehog amino acid sequence is a vertebrate hedgehog polypeptide.

9. (Currently amended) The method of claim [[4]]2 or 31, wherein the polypeptide includes at least a 50 amino acid extracellular portion of a vertebrate hedgehog polypeptide.

10. (Currently amended) The method of claim [[4]]2 or 31, wherein the polypeptide includes at least an extracellular portion of a vertebrate hedgehog polypeptide corresponding to residues 24-194 of SEQ ID No:15.

11. (Currently amended) The method of claim [[4]]2 or 31, wherein the polypeptide is modified with one or more lipophilic moieties.

12. (Previously presented) The method of claim 11, wherein the polypeptide is modified with one or more sterol moieties.

13. (Previously presented) The method of claim 12, wherein the sterol moiety is cholesterol.

14. (Previously presented) The method of claim 11, wherein the polypeptide is modified with one or more fatty acid moieties.

15. (Previously presented) The method of claim 14, wherein each fatty acid moiety is independently selected from myristoyl, palmitoyl, stearoyl, and arachidoyl.

16. (Previously presented) The method of claim 11, wherein the polypeptide is modified with one or more aromatic hydrocarbons.

17. (Previously presented) The method of claim 16, wherein each aromatic hydrocarbon is independently selected from benzene, perylene, phenanthrene, anthracene, naphthalene, pyrene, chrysene, and naphthacene.

18. (Previously presented) The method of claim 11, wherein the polypeptide is modified one or more times with a C7 - C30 alkyl or cycloalkyl.

19. (Withdrawn) The method of claim 1, wherein the *ptc* therapeutic is a small organic molecule.

20. (Withdrawn) The method of claim 19, wherein the binding of the ptc therapeutic to *patched* results in up- or down-regulation of patched and/or gli expression.

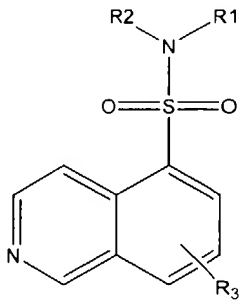
21. (Previously presented) The method of claim 2 or 31, wherein the hedgehog agonist binds to *patched* and mimics *hedgehog* signal transduction by altering the localization, protein-

protein binding, and/or enzymatic activity of an intracellular protein involved in hedgehog signaling.

22. (Withdrawn) The method of claim 19, wherein the *ptc* therapeutic is an inhibitor of protein kinase A.

23. (Withdrawn) The method of claim 22, wherein the PKA inhibitor is a 5-isoquinolinesulfonamide

24. (Withdrawn) The method of claim 22, wherein the PKA inhibitor is represented in the general formula:



wherein,

R1 and R2 each can independently represent hydrogen, and as valence and stability permit a lower alkyl, a lower alkenyl, a lower alkynyl, a carbonyl (such as a carboxyl, an ester, a formate, or a ketone), a thiocarbonyl (such as a thioester, a thioacetate, or a thioformate), an amino, an acylamino, an amido, a cyano, a nitro, an azido, a sulfate, a sulfonate, a sulfonamido, $-(CH_2)_m$-R8, $-(CH_2)_m$-OH, $-(CH_2)_m$-O-lower alkyl, $-(CH_2)_m$-O-lower alkenyl, $-(CH_2)_n$-O-$(CH_2)_m$-R8, $-(CH_2)_m$-SH, $-(CH_2)_m$-S-lower alkyl, $-(CH_2)_m$-S-lower alkenyl, $-(CH_2)_n$-S-$(CH_2)_m$-R8, or

R1 and R2 taken together with N form a heterocycle (substituted or unsubstituted);

R3 is absent or represents one or more substitutions to the isoquinoline ring such as a lower alkyl, a lower alkenyl, a lower alkynyl, a carbonyl (such as a carboxyl, an ester, a formate, or a ketone), a thiocarbonyl (such as a thioester, a thioacetate, or a thioformate), an amino, an acylamino, an amido, a cyano, a nitro, an azido, a sulfate, a sulfonate, a

sulfonamido, -$(CH_2)_m$-R8, -$(CH_2)_m$-OH, -$(CH_2)_m$-O-lower alkyl, -$(CH_2)_m$-O-lower alkenyl, -$(CH_2)_n$-O-$(CH_2)_m$-R8, -$(CH_2)_m$-SH, -$(CH_2)_m$-S-lower alkyl, -$(CH_2)_m$-S-lower alkenyl, -$(CH_2)_n$-S-$(CH_2)_m$-R8;

R8 represents a substituted or unsubstituted aryl, aralkyl, cycloalkyl, cycloalkenyl, or heterocycle; and

n and m are independently for each occurrence zero or an integer in the range of 1 to 6.

25. (Withdrawn) The method of claim 22, wherein the PKA inhibitor is cyclic AMP analog.

26. (Withdrawn) The method of claim 22, wherein the PKA inhibitor is selected from the group consisting of N-[2-((p-bromocinnamyl)amino)ethyl]-5-isoquinolinesulfonamide, 1-(5-isoquinoline-sulfonyl)-2-methylpiperazine, KT5720, 8-bromo-cAMP, dibutyryl-cAMP and PKA Heat Stable Inhibitor isoform α.

27. (Withdrawn) A therapeutic preparation of a small molecule antagonist of *patched*, which *patched* antagonist is provided in a pharmaceutically acceptable carrier and in an amount sufficient to modulate the immune system of an adult human patient.

28. (Withdrawn) A method for modulating T lymphocytes maturation, comprising administering to a patient a gene activation construct which recombines with a genomic *hedgehog* gene of the patient to provide a heterologous transcriptional regulatory sequence operatively linked to a coding sequence of the *hedgehog* gene.

29. (Currently amended) The method of claim 2, wherein suppressing ~~the immune system~~ T cell function of an animal comprises inhibiting T lymphocyte maturation in the thymus.

30. (Withdrawn) A method of claim 3, wherein enhancing the immune function of an animal comprises stimulating T lymphocyte maturation.

31. (Currently amended) A method for suppressing T cell maturation in the thymus, comprising contacting the T cell with an amount of a *hedgehog* agonist effective to suppress T cell maturation in the thymus, wherein the *hedgehog* agonist is a polypeptide

which includes a *hedgehog* amino acid sequence that is at least 90% identical to at least one of SEQ ID Nos. 10-18, or any fragment thereof that binds to a *patched* polypeptide.

32. (Canceled)

33. (New) The method of claim 2 or 31, wherein the *hedgehog* agonist is an N-terminal fragment of the *hedgehog* polypeptide comprising at least 50 contiguous amino acids.

34. (New) The method of claim 33, wherein the *hedgehog* agonist is an N-terminal fragment of the *hedgehog* polypeptide comprising at least 150 contiguous amino acids.

35. (New) The method of claim 33, wherein the *hedgehog* agonist includes at least an N-terminal portion of the *hedgehog* polypeptide corresponding to a 19 kDa fragment of an extracellular domain of the *hedgehog* polypeptide.